

STANDARD OPERATING PROCEDURES

CLIKP DYNAMICAL CLIMATE PREDICTION TOOL

Abstract

The SOPs are provided to govern the process for generating dynamical climate forecasts using the CLIKP Online Tool for Seasonal Climate Prediction, provided by the Republic of Korea-Pacific Islands Climate Prediction Services project

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Introduction

Climate variability represents a major risk for most Pacific Islands. Capacity to manage the risks associated with seasonal and inter-annual fluctuations as well as the increasing impacts of climate variability and change is vital to Pacific communities. In particular, within the context of a changing climate, Pacific Island Countries (PICs) need to be able to generate and apply seasonal predictions to ameliorate the social and economic difficulties associated with seasonal climate anomalies such as rainfall extremes. Pacific island countries need to be aware of changes in sea level and how they might affect low-lying communities. Pacific island countries rely on the natural environment with respect to: ecosystem services; subsistence farming; economic activities including tourism and fisheries; and natural resource use.

Vanuatu in particular is one of the most vulnerable countries in the Pacific and SIDS more generally at a global level. Ready access to credible, science-based climate forecast information together with requisite capacity and infrastructure to inform all aspects of policy development, planning and associated decision-making is a critical 'public good' requirement of key stakeholders in vulnerable countries. Indeed such use of climate forecasts also needs to be mainstreamed into institutional arrangements within different levels of government in order to underpin long-term sustainability of climate adaptation, disaster risk.

Seasonal to inter-annual climate variability has important practical, planning and policy implications for Pacific Island Countries (PICs). Acknowledging the importance of these implications and providing the basis for the introduction of dynamical climate prediction services to PICs, through CLIK℗ or Climate Toolkit for the Pacific islands.

CLIK℗ was developed by the **Korea-Pacific Islands Climate Prediction (ROK-PI CliPS) Project** and is based on the established CLIK (Climate Information toolkit) at APEC Climate Center (APCC). The system is developed to benefit the NMHSs in Cook Islands, FSM, Fiji, Kiribati, RMI, Nauru, Niue, Palau, PNG, Samoa, Solomon Islands, Tonga, Tuvalu and Vanuatu.

CLIK℗ is a regionally tailored online tool for the Pacific Island Countries and Territories. It provides Pacific oriented information using multi model dynamical seasonal forecast based on different combinations of the users's preference. As the forecasts are combined with the best performance for their region of interest.

This Standard Operating Procedures (SOPs) will govern the process for generating a Dynamical Climate Forecast using the CLIK℗ Online Climate Prediction tool http://clikp.sprep.org/

The SOP will be administered by the Principal Scientific Officer in charge of Climate Prediction Services with overall supervision of the Director of Meteorology.

There is ample evidence to show that countries with advisory systems on the state of the natural environment and upcoming seasonal conditions, including any enhanced risks of severe weather, are in a better position to develop strategies to cope with the vagaries of climate, which will in time lead to more robust economies and improved social well-being.

1. Sign In to CLIKⓅ

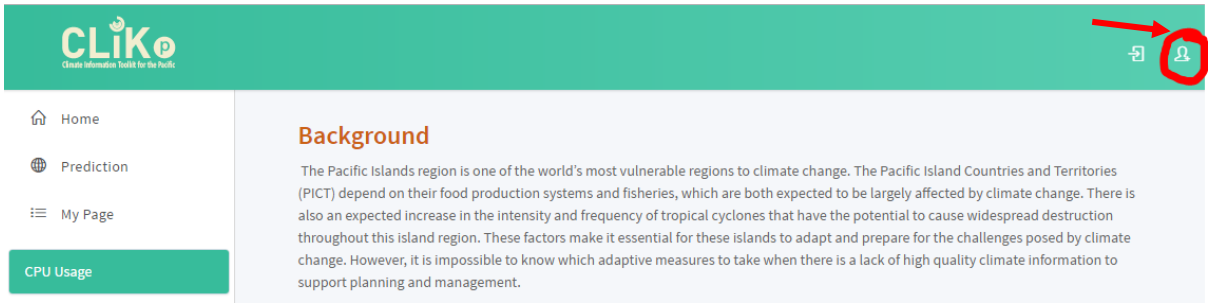
Create CLIKⓅ Account

1 Sign In

□ The user should create his/her account for using CLIKⓅ system.

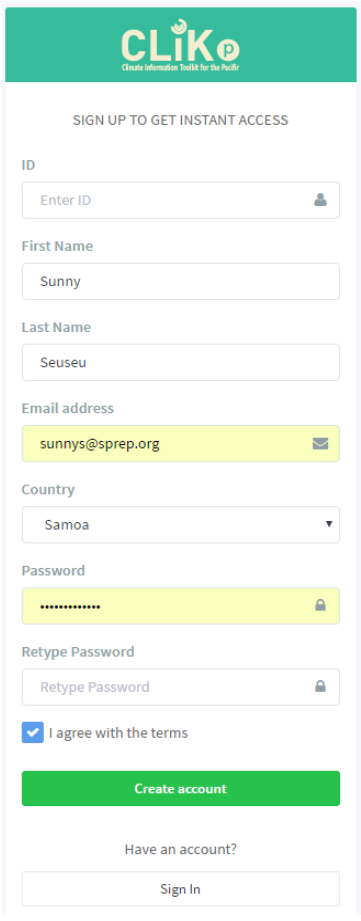
1.1 Create account

□ When the user connects to the CLIKⓅ website, there are 'Login' and 'Register' icons on the upper right corner. Click the 'Register' icon (Fig. 1) to create a new user account.



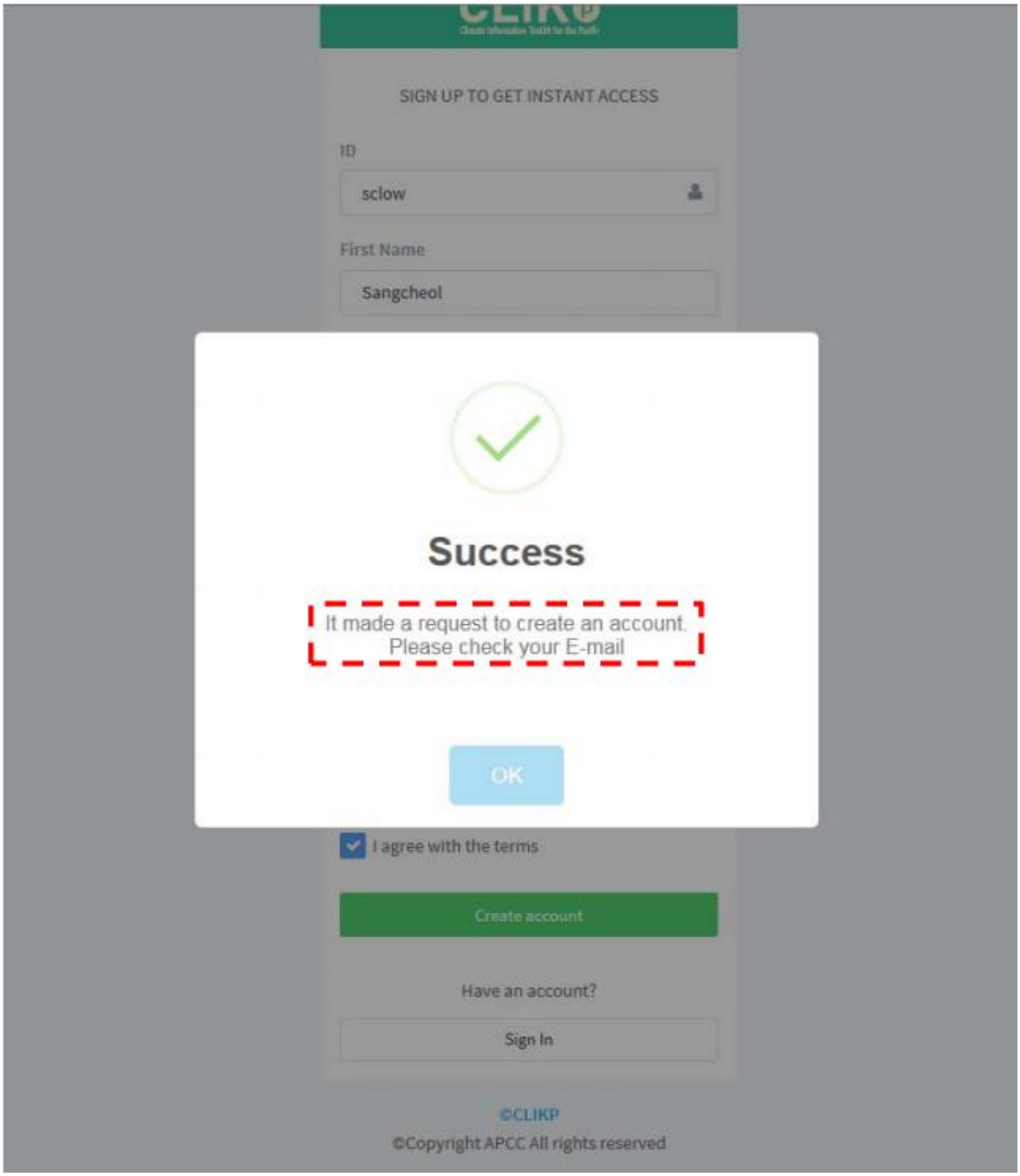
(Fig 1) Register icon

□ Input the necessary user information to create an account and click 'Create account' button on the register page shown in (Fig. 2) below.



(Fig 2) Register page

□ If the account is created successfully, a ‘Success’ message will be displayed as it is in (Fig 3). Also, the activation e-mail for the account is sent to the user’s e-mail address.



(Fig 3) Success notification window

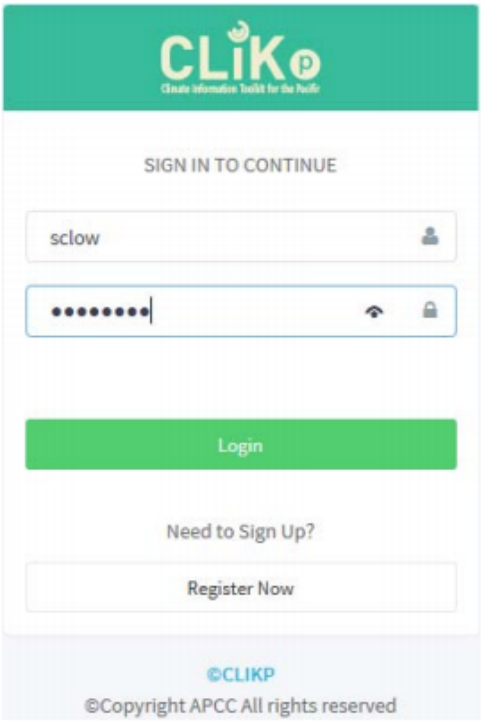
□ (Fig 4) shows an example of the activation e-mail. The user can authenticate the new account by clicking the [LINK] in the e-mail. Then, the CLIKⓅ login page will appear.

2. Activation of Account



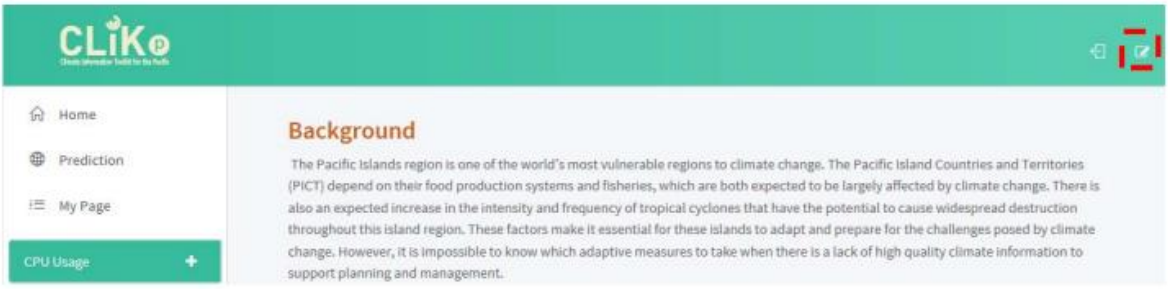
(Fig 4) Activation of user account

☐ If the authentication is successful, the user will be able to login as shown in (Fig 5).



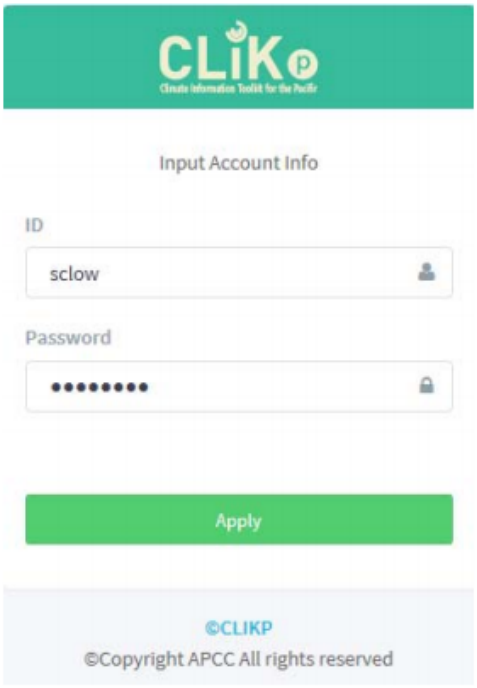
(Fig 5) Login page

☐ After signing in, the user can edit his/her information by clicking the 'Edit' icon on the upper right corner (Fig 6).



(Fig 6) Edit icon

☐ In order to ensure the security of the account, the CLIKⓅ system requires the user to verify their 'ID' and 'Password', as shown in (Fig 7), in order to edit his/her information.



(Fig 7) User account verification

3. Modification of Account

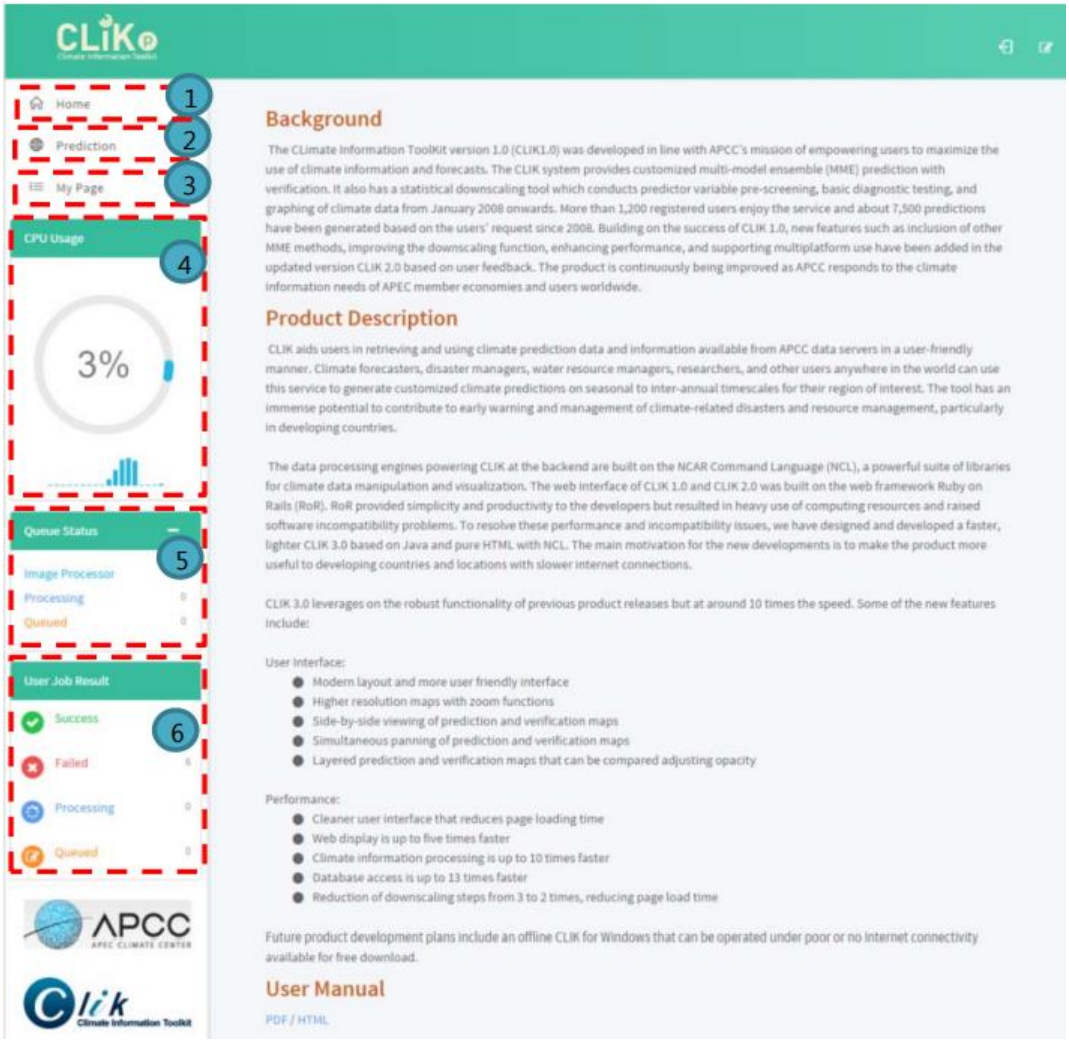
☐ After making the necessary modifications to the user information, click 'Modify account' button to save the changes to the information. (Fig 8) shows an example.



Fig 8 – An example of modify user account

4. CLIKⓅ Landing Page

□ (Fig 9) shows the intro. page of the CLIKⓅ system that provides basic information and user interface.



(Fig 9) CLIKP Landing Page

1. Home – Move to the Intro. page

2. Prediction – This menu provides MME prediction & verification

3. My Page – Used to check user job list and processing results.

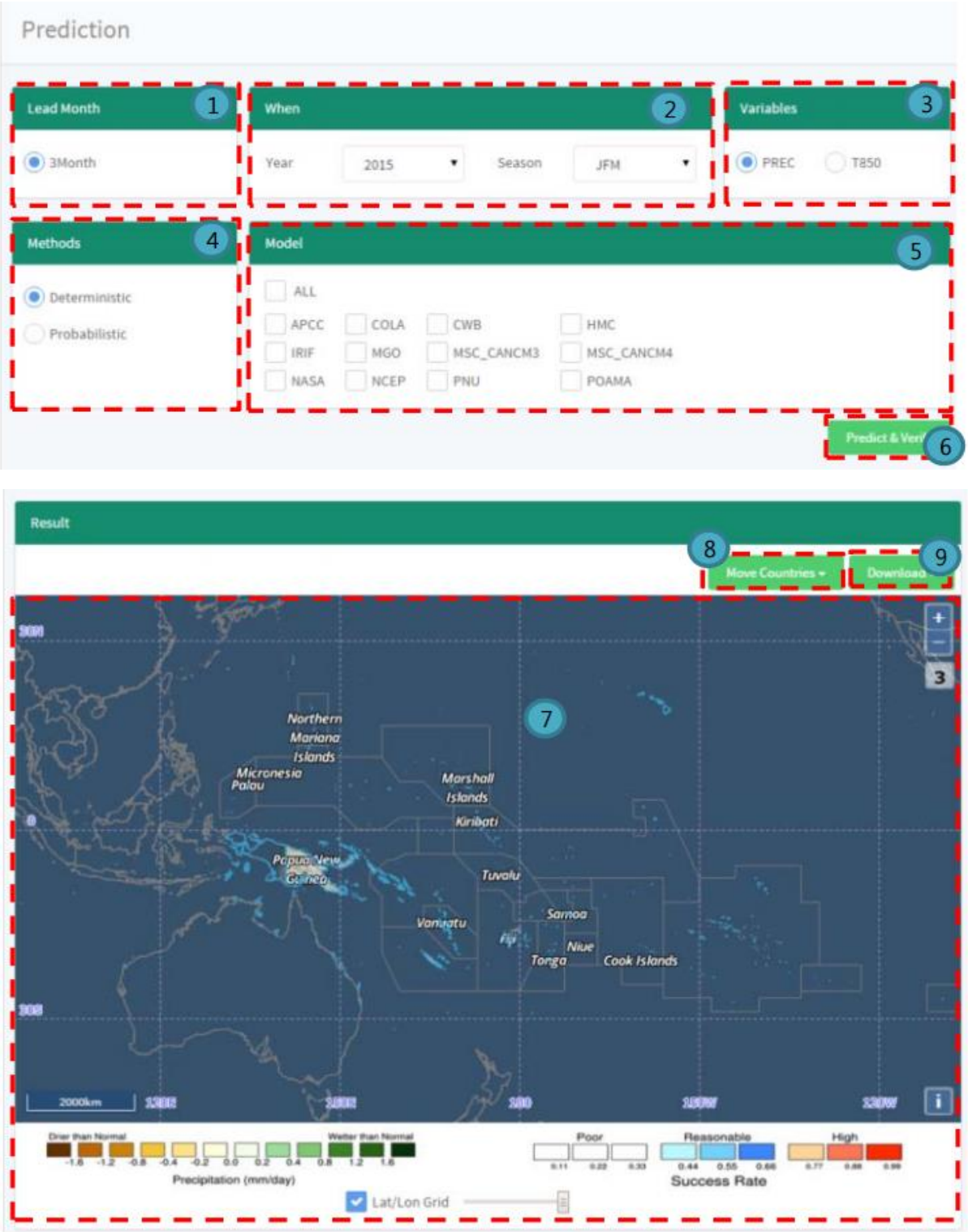
4. CPU Usage – Displays CPU usage information of the CLIKⓅ system. It is automatically updated every 30 seconds.

5. Queue Status – Shows current number of image processing servers, number of processing jobs, number of queued jobs. It is automatically updated every 30 seconds.

6. User Job Result – Shows the status all of the user's jobs: Success, Failed, Processing, and Queued. It is also automatically updated every 30 sec.

5. Climate Prediction

□ The prediction menu provides MME prediction and verification and shows the results in the built-in map focused on the Pacific region.



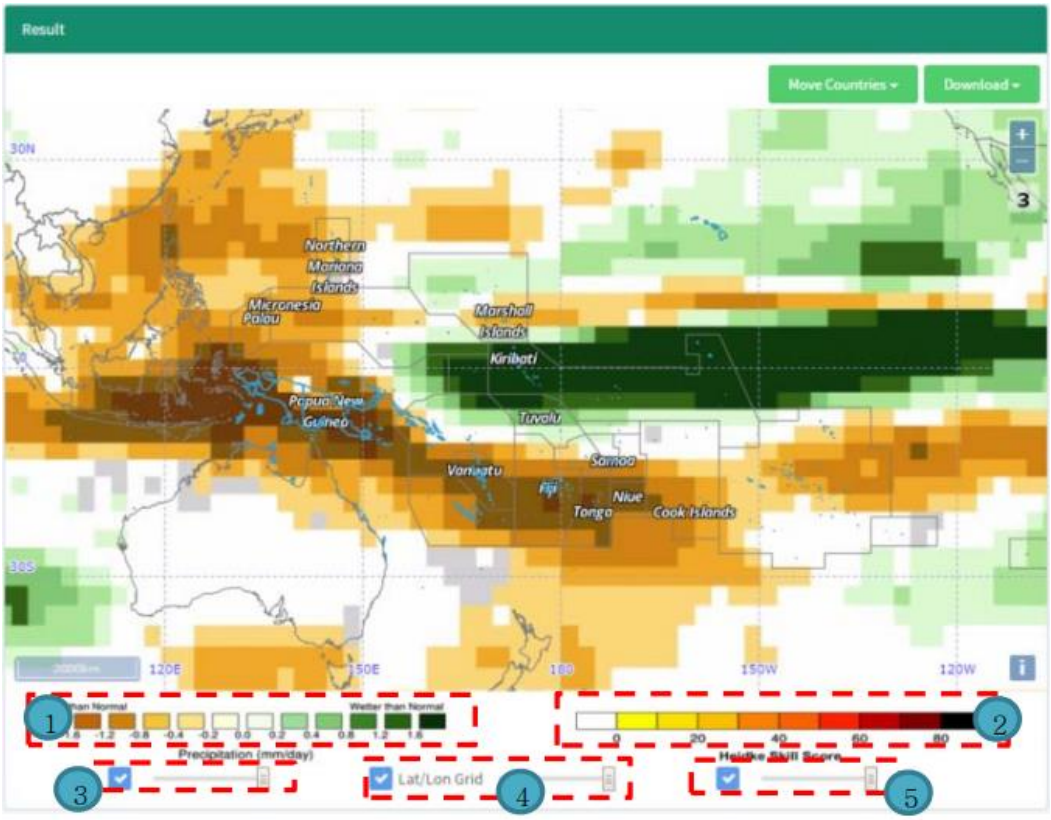
(Fig 10) Prediction Screen

Prediction Tab – Options Menu

1. Lead Month – Select lead month of MME Prediction.
2. When – Select year and season. For example, you could select 2015 for the year and JFM (January-February-March) for the season.
3. Variables – Select one variable for MME prediction (PREC: Precipitation, T850: 850hPa Temperature).
4. Methods – Choose one of DMME and PMME that use simple composite method and Gaussian approximation, respectively.
5. Model – Select model to be used in the prediction, Available models could change due to lead month, time frame, and other variables.
6. Predict & Verify – Request "Prediction and Verification" with customized parameters due to user's choice.
7. Map – Present the results of the "Prediction and Verification" on the map.
8. Move Countries – Move latitude and longitude coordinates of the map to selected country.
9. Download – This button supports the downloading of files; PNG, NC and ASCII of the result.

6. Result Details: Predict & Verify

□ Successful result of user's request will be presented in a Pacific oriented map.



(Fig 11) Result Details: Prediction Result

1. The first color bar shows the information that indicates the meaning of color for the prediction results.

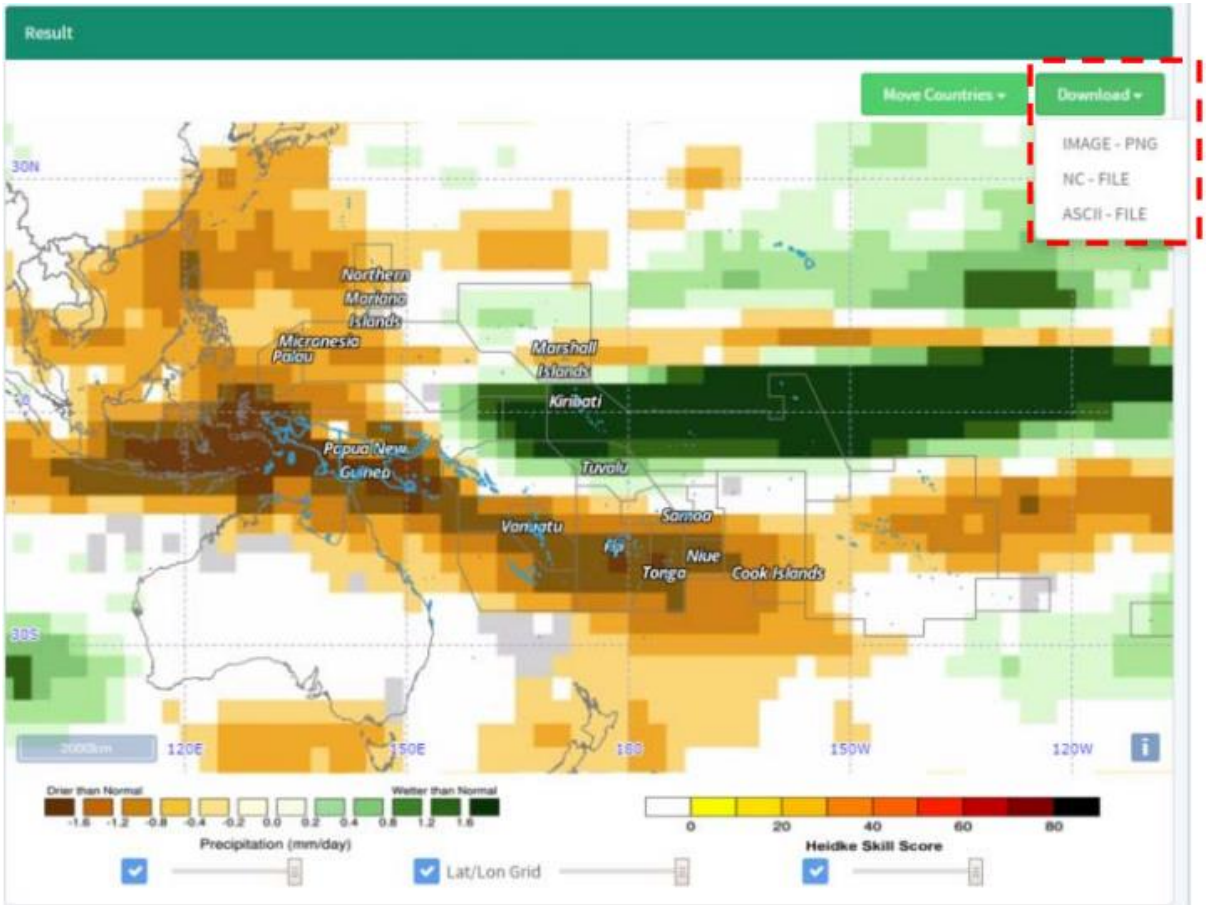
2. The second color bar shows information indicating the meaning of color for the verification results.

3~5 allows the user to choose to display the (3) prediction result, (4) latitude/longitude grid, and (5) verification result. The corresponding box should be checked if the user would like to display that aspect, and unchecked if the user would like that aspect to not be displayed. The horizontal scroll bar adjusts the opacity of each display. This allows for the user to simultaneously view and compare the prediction and verification results, as well as personalize the image to fit their needs.

7. Result Details: Download

The user can download the result in various types of files such as image (PNG), binary data (NC), and text data (ASCII) files.

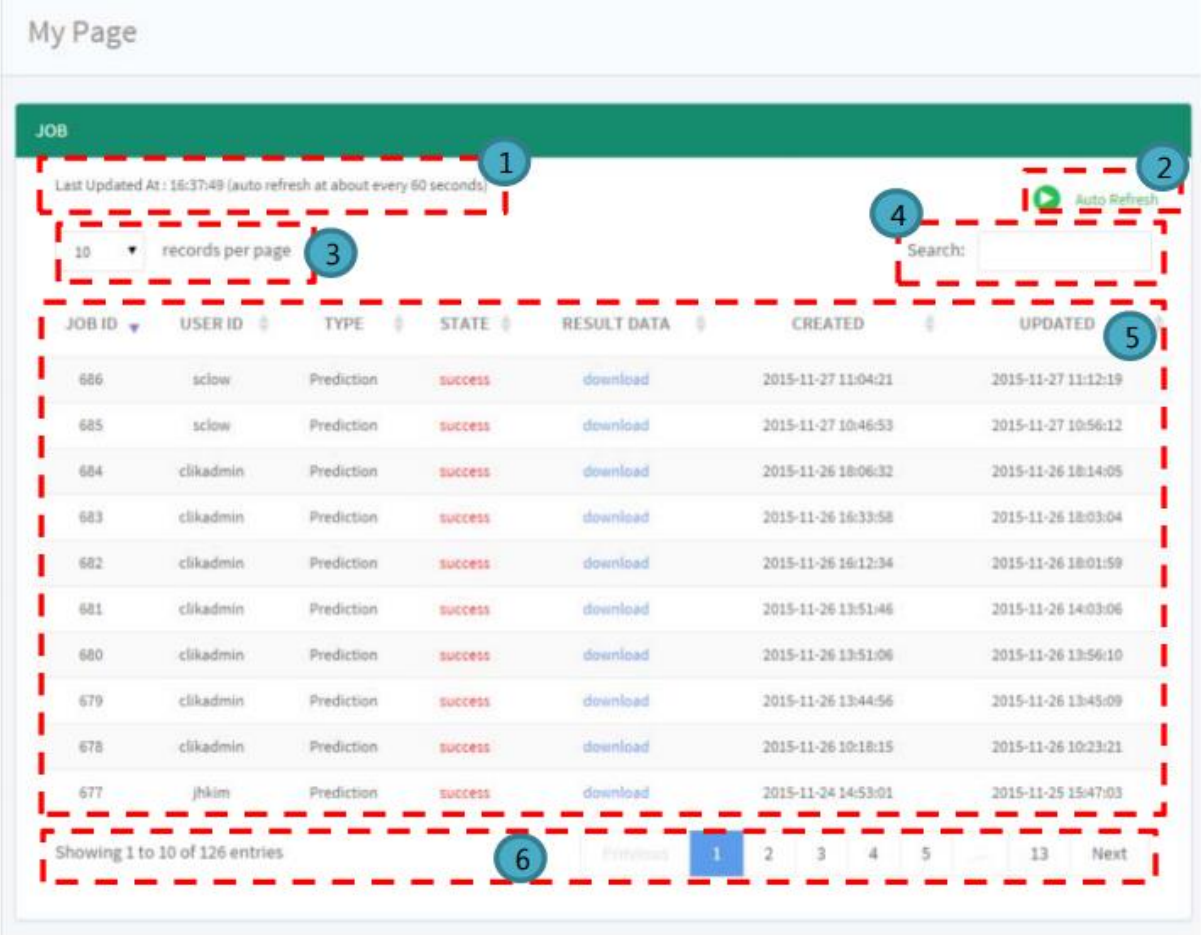
□ Especially, the downloaded image file precisely represents the appearance of the displayed results (lat/lon grid, transparency, etc.) to the end-user.



(Fig 12) Download button

8. My Page

□ ‘My Page’ allows users to check the list of jobs and their respective statuses.



(Fig 13) My Page

1. The information on the jobs is automatically updated every 60 seconds, and shows the first created and the last updated time.

2. The status of ‘Auto Refresh’ indicates whether it is automatically updating or paused. It is automatically paused when searching something or when looking at other pages besides the first page.

3. Set the number of row shown in the jobs table.

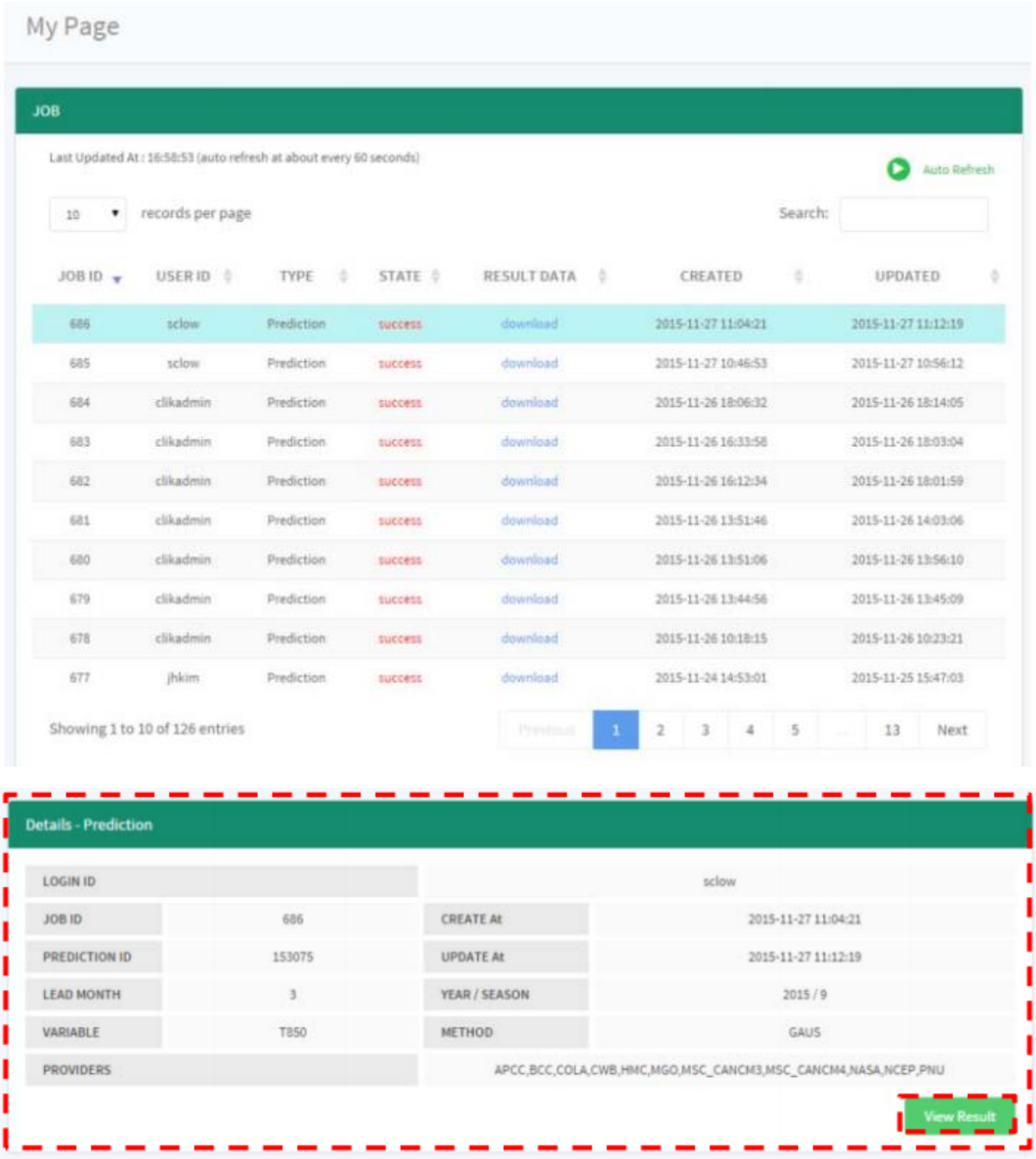
4. Search jobs with keywords.

5. The table of jobs contains all of the information on the jobs created by the user. The user can sort the jobs according to different columns (ascending and descending) by clicking each column.

6. Indicates current page and provides the ability to view a specific page.

□ ‘User ID Column’ is only displayed to the administrator.

□ If the user selects a prediction job that indicates a ‘Success’ state, a ‘View Result’ button will be displayed to the user. By clicking this button, the user can see the prediction results.



(Fig 14) Job List – View Result

END.